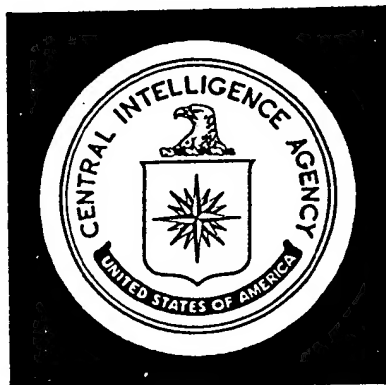


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1998

Intelligence Report

Warsaw Pact Air Power:

Concepts for Conventional Air Operations Against NATO

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October 1972

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
October 1972

INTELLIGENCE REPORT

Warsaw Pact Air Power: Concepts for
Conventional Air Operations Against NATO

Summary

The tactical air forces of the Warsaw Pact are designed in accordance with Soviet doctrine originating in the Fifties that envisaged a war in Europe as nuclear from the outset. Soviet views have now changed to include the possibility of an initial period of conventional war. The air forces, however, which have a major responsibility in either circumstance, have changed little in terms of equipment to reflect the new view.

During the period of conventional conflict, Pact air forces would be the principal means for destroying critical targets throughout the theater. Pact planners have had to develop concepts and capabilities for attacking with conventional weapons targets which in earlier planning they had designated for nuclear attack. This problem was exacerbated by the small conventional payloads of Pact tactical aircraft and by the greater vulnerability to air defenses of the bombers which would have to assume the primary strike role.

A coordinated plan referred to in this report as the "Air Operation" is intended to enable the Warsaw Pact air forces to carry out a mission for which they were not originally intended and for which they are not now well suited.

Note: This report was prepared by the Office of Strategic Research and coordinated within CIA.

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The primary objective of Pact air forces during the conventional phase is to destroy the NATO nuclear-capable air forces in order to limit NATO's capability to escalate the conflict to nuclear war. The attainment of air superiority is a prerequisite, however, because the Pact is forced to rely on conventionally armed medium bombers as its main striking force against NATO targets. The greater range and payload capabilities of medium bombers are required, in turn, to compensate for the deficiencies of Frontal Aviation aircraft.

Soviet medium bombers handle poorly at the low altitudes characteristic of operations in a heavy air defense environment, and at higher altitudes are easily detected and vulnerable to missiles and interceptors. The need to use the bombers and the performance limitations of these aircraft probably were the primary influences in the development of the Air Operation plan, which assigns Frontal Aviation units to protect the more vulnerable bombers by destroying or temporarily suppressing air defenses.

Under the Air Operation plan the Frontal Aviation and Long Range Aviation forces would be committed in three-wave attacks. The first wave, consisting of about 40 percent of available Frontal Aviation aircraft, would be responsible for clearing corridors through the NATO forward air defense belt. The second wave, about 35 percent of the Frontal Aviation aircraft, would pass through these corridors and spread out to attack air defenses and airfields as far as about 165 nautical miles beyond the frontier. The third wave, comprised of LRA medium bombers, would attack targets throughout the theater.

Because the conventional phase is considered to be transitory, Pact planners stress the importance of maintaining a portion of the Frontal Aviation and LRA medium bomber forces ready to

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preempt a NATO nuclear attack or to deliver concurrent attacks. These forces--about one-quarter of Frontal Aviation and an estimated one-third of the LRA medium bombers--would be withheld from the Air Operation.

The Air Operation plan introduces significant changes to previous estimates as to how Pact planners intend to commit their air forces to a conventional war in Europe. Frontal Aviation, subordinate to the various ground force fronts, was previously believed to be under the control of the front commanders. Under that arrangement, aircraft subordinate to second-echelon fronts required to move forward from the USSR might not be committed until their fronts were engaged.

Under the Air Operation plan, however, Frontal Aviation from all fronts opposite NATO's Central Region--minus only a reserve for nuclear attack--apparently would be committed to the attack from the outset. A maximum effort would be made to destroy the NATO air forces in the first few days. This is consistent with overall Pact doctrine which envisions a maximum effort during a short war with little force structuring to allow for a prolonged conflict. Unlike the ground forces, which would move forward in two echelons, all Frontal Aviation--except for the nuclear reserve--would be committed in the initial action.

The immediate commitment of most available aircraft to a high-intensity air war would reduce the capabilities of the air forces to engage in subsequent activity. In the Pact's view, however, the Air Operation apparently is more important than maintaining intact air units solely for the support of the second-echelon fronts. As a result, Pact frontal ground operations in the subsequent stages of a war in Europe could--depending on the success of the Air Operation--be hampered by a lack of air support.

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The requirements of the Air Operation--both for forces and for close coordination--necessitate changes in Pact procedure for the control of air forces. Under the Air Operation plan, a headquarters under the Soviet General Staff or the Soviet Air Forces probably would be established, replacing the control of the front commanders and given full command of the participating Frontal Aviation and LRA forces. Even after the Air Operation was terminated, this higher headquarters probably would retain overall control of Pact air forces.

The requirements of the Air Operation would take precedence over the air support needs of the fronts. Ground units would be forced to rely mainly on their own firepower and air defense during the Air Operation and possibly during subsequent phases of the war, if Pact air forces incurred significant losses in the initial battle for air superiority. Recognition of this factor may, in part, have prompted the increases in divisional artillery and improvements in divisional air defense which have been noted over the past five years.

The Air Operation plan appears to make maximum use of the capabilities of currently available forces by using medium bombers as the main striking force. The limitations on range and payload of Frontal Aviation are offset by using most of these aircraft to suppress air defenses with cannon and rocket fire. The potential advantages of the Air Operation to the Warsaw Pact can be gained only through speed and surprise because of the requirement to engage rather than avoid NATO air defenses in the execution of the corridor plan. The Pact advantage would be sharply reduced if NATO quickly identified the penetration corridors and moved effectively to concentrate its defenses in those areas.

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Background:
The Conventional-Phase Concept

In the late Fifties and early Sixties, Warsaw Pact concepts for air operations were based on the Soviet doctrine that armed conflict with NATO would either begin with or immediately escalate to nuclear war. Tactical air doctrine was formulated in the context of an integrated combined-arms strategy for nuclear war in the European theater.

... , massive nuclear strikes would be made throughout the depth of the theater at the outset of a war, destroying NATO's nuclear capabilities, disorganizing its resistance, and enabling highly mobile ground forces to overrun Western Europe rapidly. Later evidence indicated that most of the nuclear strikes were to be delivered by Soviet strategic peripheral attack forces--MRBMs and IRBMs in the western USSR and medium bombers of Long Range Aviation. Only a relatively small portion of the nuclear strikes--primarily those in the more immediate battlefield area--were to be made by the tactical missile and rocket forces and by tactical aviation subordinate to the fronts.

The offensive role envisioned for tactical aviation had been considerably diminished in comparison with that of the period immediately following World War II, when the Soviets had larger nonnuclear tactical air forces. The developing nuclear concept of the early Sixties influenced the reconfiguration of Frontal Aviation* and caused a general decline in total capabilities for conventional bombing.

In the mid-Sixties Soviet planners, reacting to the NATO doctrine of "flexible response," recognized

* *Frontal Aviation (Frontovaya aviatsiya) is the Soviet term denoting tactical air forces which are assigned to the fronts.*

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that war with NATO could begin without the immediate use of nuclear weapons and that nonnuclear conflict might continue for some time. They concluded that war in Europe could begin with an attack by NATO conventional forces. Pact strategists evidently still consider this only a phase of an escalating conflict which is likely to go nuclear in a few days. Nevertheless, they apparently concluded that the action taking place during this conventional phase would play an important role in determining the outcome of the war. Pact planners stress the importance of using the conventional phase to improve the Pact's nuclear position relative to that of NATO.

During the period of conventional conflict Pact air forces would be the principal means for destroying critical targets throughout the theater. Pact planners have had to develop concepts and capabilities for attacking with conventional air weapons targets to which they had allocated nuclear weapons in earlier planning. The problem was exacerbated by the small conventional payloads of tactical aircraft which had been designed primarily for nuclear war.

Role of Warsaw Pact Air Forces in Conventional War

The Air Operation Concept

The Pact's Air Operation would consist of a series of massive air attacks by tactical aircraft and medium bombers at the outset of conventional conflict. These attacks would be compressed into the shortest possible time. The immediate objectives would be to achieve air superiority over the battlefield area and reduce NATO nuclear capabilities.

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Nearly all tactical air units available for early commitment against NATO and most of the medium bombers from Long Range Aviation in the western USSR would be committed to the Air Operation during the first day or so of combat. The Air Operation is separate and distinct from air force action in direct support of ground units. It is planned for support of strategic theater objectives rather than specific front operations. For this reason, its requirements--at least for the initial period of conventional conflict--take precedence over those for direct support of ground operations of the front.

Target Priorities for the Conventional
Air Operation

The priorities assigned to NATO targets are based on their capacity to cause losses among Pact troops. The most critical targets for the Air Operation in the following order of importance would be:

1. Aircraft of the NATO strategic air forces based in Europe. These may include the Vulcan medium bombers and US F-111 bombers based in the UK.
2. Tactical air forces in the forward area, particularly those capable of delivering nuclear weapons.
3. Depots for nuclear weapons.
4. Nuclear missile launchers.

The priority assigned to reducing NATO nuclear capabilities during the conventional Air Operation reflects the Soviet conviction that conventional conflict will only be a prelude to a nuclear war. Pact expectations as to the duration of the conventional phase are imprecise. In most exercise

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scenarios, the conflict escalates after about three days, although some high-level Pact officers apparently believe that conventional operations could last 10 to 12 days. The escalation to nuclear war is regarded as virtually inevitable, however, whatever the length of the conventional phase.

One reason NATO air forces are regarded as the most critical targets in the conventional phase is the Pact expectation that a major portion of NATO nuclear strikes would be delivered by aircraft. There probably are other reasons for assigning priority to NATO air force resources which are directly responsive to requirements for the conduct of a conventional conflict. Pact planners probably identify NATO air strength as the most immediate threat to their own air forces and nuclear resources in a conventional conflict. Remembering the lesson of the 1967 Arab-Israeli war, they hold that the initial achievement of air superiority by destroying enemy aircraft on the ground can quickly decide the outcome of a conventional war. Tactical missiles, on the other hand, are not a critical factor in conventional warfare, and attacks on them would be secondary in importance to attacks on NATO air forces.

A decision not to use nuclear weapons would place on Pact air forces the burden of attacking airfields as well as tactical missile systems. Under such circumstances, Pact planners would be forced to establish priorities for the use of their limited resources. The heavy demands on Pact air forces probably are the reason these forces would not engage in conventional attacks on such large-area targets as harbors and industrial and administrative centers.

Another reason for assigning air facilities priority over tactical missile systems is the target acquisition problem presented by the mobile NATO tactical missiles. The success of reconnaissance to aid in locating missile sites would be dependent on the achievement of a degree of local air superiority.

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Comparison of Warsaw Pact Planning for Air Operations
in Nuclear and Conventional War

———— Nuclear War ————

———— Conventional War ————

Targets

Over 600 targets, including airfields, nuclear-capable missiles and delivery systems, nuclear depots, air defenses, troop concentrations, ports and industrial centers, and command and control facilities.

About half the number of targets considered under the nuclear war plan. Airfields, command and control centers, and nuclear depots are primary targets, but suppression or destruction of air defenses is a prerequisite. (Large-area targets are deferred until nuclear stage.)

Forces

Some 2,000 nuclear strikes—80-90 percent delivered by IRBMs, MRBMs, and LRA bombers, 10-20 percent by tactical missiles and rockets subordinate to front commanders and by some 600 Frontal Aviation aircraft.

Some 310 conventionally armed medium bombers provide the main striking force, supported by about 1,900 Frontal Aviation aircraft to suppress air defenses. (About one-third of medium bombers and one-quarter of Frontal Aviation aircraft are kept in readiness for transition to nuclear war.)

Control of Forces

Bombers and strategic missiles are controlled by the Soviet high command. Frontal Aviation is subordinate to front commanders.

Frontal Aviation and LRA medium bombers committed to the Air Operation probably are controlled at theater-level headquarters. After the operation, Frontal Aviation would be allocated to front commanders.

Support to Front Ground Forces

Frontal Aviation is used at the discretion of the front commanders for close air support, air defense, and reconnaissance.

During the Air Operation about one-third of Frontal Aviation sorties would be allocated to front commanders. The Air Operation would take precedence. Ground forces would have greater responsibility for their own air defense and fire support.

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Medium Bombers: The Main Striking Force

In addition to expanding the required scope of air force operations, a decision not to use nuclear weapons considerably reduces the destructive power of the individual aircraft. The use of conventional bombs instead of nuclear warheads requires that targets be attacked repeatedly by larger numbers of aircraft, with greater accuracy. Even then the destructive effect of nuclear weapons is seldom achieved.

This problem is exacerbated by the limited payload capacities of Pact tactical aircraft. The Soviets apparently did not originally anticipate that the offensive roles of Frontal Aviation in nuclear war--tactical nuclear strikes and close support with conventional weapons--would require aircraft with large payload capacities. Emphasis was placed instead on fast, relatively light aircraft which could be deployed in large numbers and could operate from dispersed airfields to enhance survival in a nuclear attack. Effective conventional bombing by Pact tactical aircraft of such large targets as airfields would require unattainably high sortie rates, considering the limitations imposed by logistics and support systems and the characteristics of the aircraft. Apparently this has led Pact planners to assign the primary strike role in the conventional Air Operation to the medium bombers of the LRA.

Soviet medium bombers handle poorly at the low altitudes characteristic of operations in a heavy air defense environment. At higher altitudes, however, such bombers are more easily detected and more vulnerable to missiles and interceptors.

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Attacks on NATO Air Defenses:
A Prerequisite

During the Air Operation, Frontal Aviation units are assigned to protect the more vulnerable bombers by destroying or temporarily suppressing air defenses.

During the conventional phase, the Pact would have to commit air forces against relatively intact defense systems. Under the earlier concept that a war in Europe would be fought with nuclear weapons from the outset, NATO air defenses were to be destroyed or disorganized by initial Soviet nuclear missile strikes. Pact aircraft were not expected to destroy or pass through significant, intact NATO air defenses. In conventional war, however, most of the tactical aircraft in Frontal Aviation would have to be committed immediately to operations to destroy or suppress NATO air defense systems before attacks on other targets could begin. Air superiority in at least selected areas is to be achieved before the main strike force of LRA bombers is employed.

Readiness for Nuclear Contingencies
Maintained

The need to maintain readiness for delivering nuclear strikes in the event of escalation to nuclear war conflicts with the demands on Frontal Aviation and LRA forces for conventional bombing. Some LRA bombers and nuclear-armed Frontal Aviation aircraft would be withheld from the conventional air action in readiness to deliver nuclear strikes either on the first indication of a NATO intention to launch nuclear strikes or in retaliation for NATO strikes.

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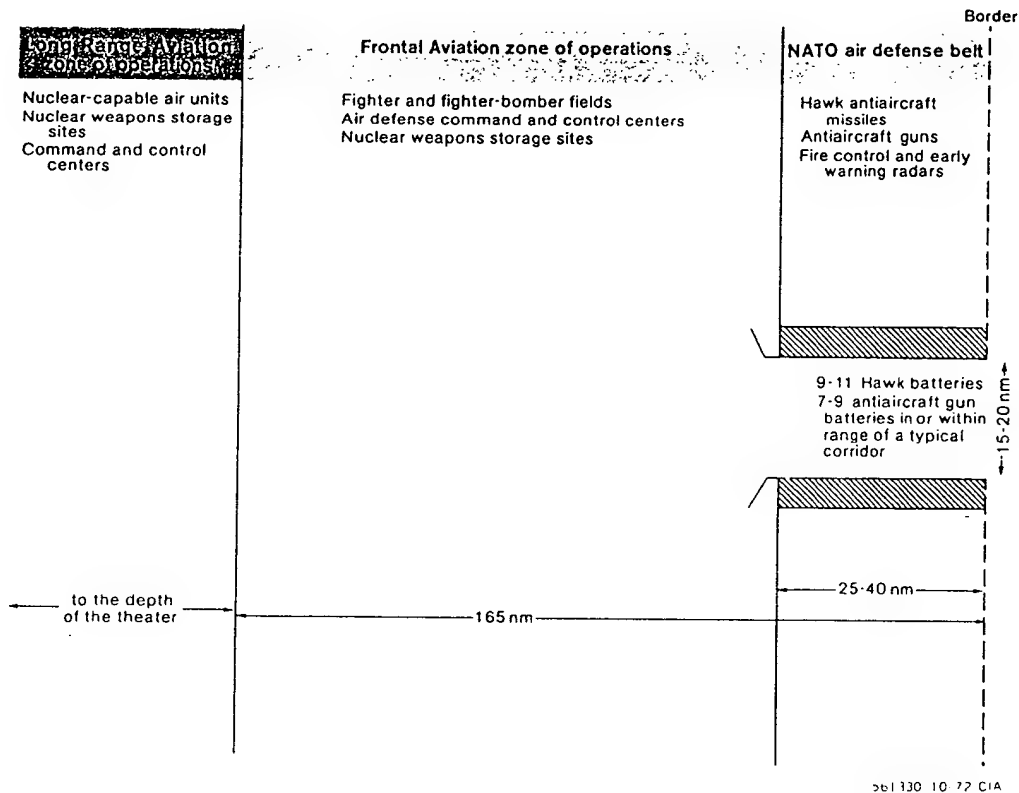
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The Air Operation Plan

Particulars of the Air Operation are discussed in this section. Force requirements for the Air Operation and a comparison of these requirements with the estimated forces available to the Pact are discussed in subsequent sections.

The Air Operation consists of mass assaults, each involving at least two waves of attacking aircraft, followed by smaller, concentrated at-

Warsaw Pact Targeting of NATO Installations and Air Defenses



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tacks on isolated targets. Frontal Aviation and the LRA would not be the only forces in the operation. Warsaw Pact national air defense forces and such ground force elements as artillery, anti-aircraft batteries, and electronic countermeasures units would also participate.

The depth of the area involved is governed by the targets assigned by the Warsaw Pact high command. The duration of the operation is determined by the targets assigned as well as by the time allowable for their destruction and the forces committed to the task. The Air Operation probably would last two to four days, including the initial mass strikes and subsequent smaller, concentrated strikes.

The First Wave: Breaching the Air Defenses

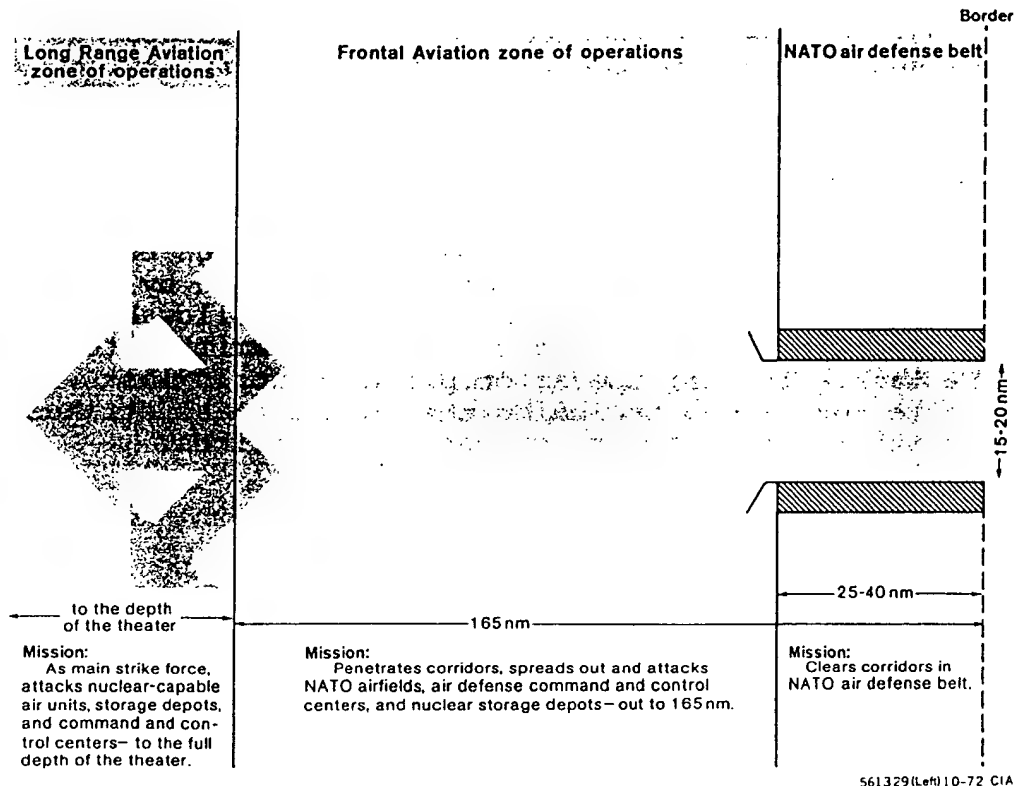
The initial wave of air strikes would be launched by Frontal Aviation forces to clear corridors through NATO forward air defenses. One or two corridors would be established opposite each front. The forces in position for early commitment against NATO would consist of three fronts, hence some three to six corridors would have to be cleared during the first wave. Pact planners envision a typical corridor as about 15 to 20 miles wide and 25 to 40 miles deep containing Hawk batteries and 40mm antiaircraft gun batteries. Rather than attacking the missile launchers and gun batteries directly, the tactical air forces will attempt to put them out of action by destroying their radars.

Not only fighter-bombers but also frontal air defense fighters would be assigned to the first wave and committed to help clear the corridors. These fighters would be tasked with protecting the

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The First Assault of the Air Operation Missions and Operating Areas of the First Three Waves



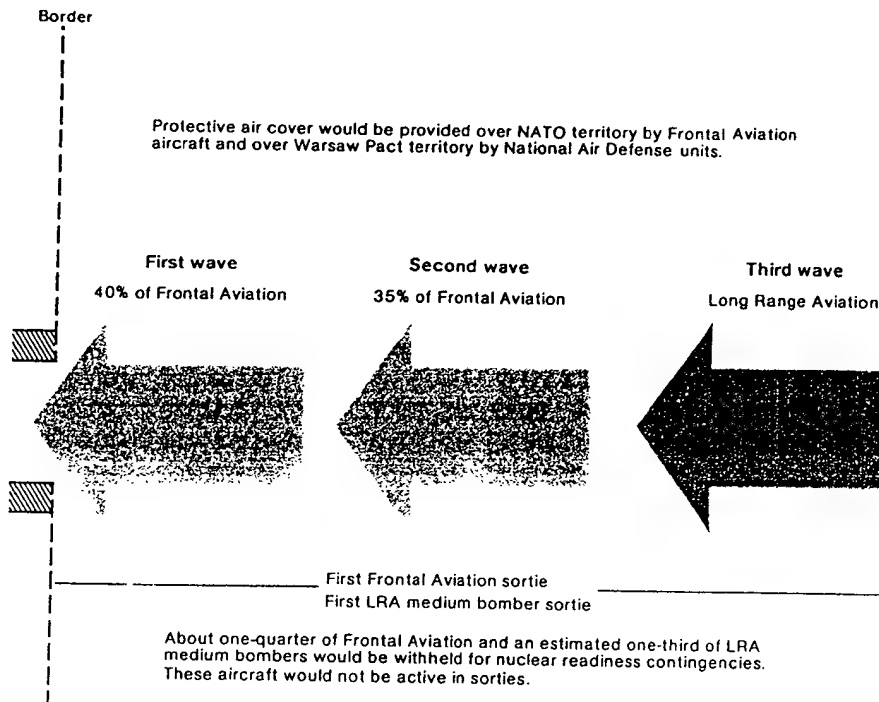
ground attack aircraft and preventing NATO interceptors from operating in the corridors to make up for the loss of the destroyed ground-based air defenses.

The initial Frontal Aviation attackers are to be preceded by tactical aircraft equipped for electronic countermeasures (ECM) to jam radars and communications. In addition, many of the attacking aircraft are to be equipped for jamming as well as for attack missions, and the ground forces opposite the corridors would also jam NATO air defense radars and communications. Pact planners also would attempt to disguise the locations of the corridors by concealing the concentrations of air units, by launching diversionary thrusts, and by electronic jamming in other areas.

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The First Sortie of the Air Operation



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The emphasis on jamming was demonstrated in the 1968 Czechoslovak intervention.

Pact planners probably realize that they do not have sufficient resources for effective jamming of the NATO air defense radars and communications along the entire border and that jamming will only be effective if there is a maximum concentration of both ground and airborne jamming equipment opposite a few narrow sectors.

The planning for the first wave appears to set unrealistic goals. Only five minutes are allocated to attack a corridor which may be as large as 800 square miles and which may contain as many as 60 air defense targets.

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The Second Wave: Frontal Aviation
Attacks in Depth

The second-strike groups are also to be comprised of tactical aircraft from the frontal air armies. These are to pass through the corridors five minutes after the first wave.

Second-strike groups are not intended to engage the ground-based air defense sites in the immediate border areas. Rather, these aircraft would pass through the corridors where defenses would be at least suppressed by the first wave. The second wave would then spread out and attack NATO air forces and air defense installations behind the forward defenses.

The priority targets for these strikes are the NATO tactical airfields--particularly those with interceptors--and air defense command and control centers. These strikes, like those of the first wave, appear to be directed toward suppressing NATO air defenses in preparation for the LRA strikes which follow. The Frontal Aviation aircraft in the second wave are also intended to defend from NATO interceptors the LRA bombers which follow. Rather than actually escorting the bomber formations, the Frontal Aviation fighters apparently are intended to seek out NATO fighters for air-to-air combat and to establish blocking positions on either side of the bomber flight paths.

The Third Wave: The Main Striking Force

LRA medium bombers from the Soviet Northwest and Southwest Bomber Commands would follow the second wave of Frontal Aviation fighter-bombers by some 10 to 20 minutes. This force would consist of TU-16 Badgers and TU-22 Blinders. If the attacks of the second wave went according to plan, the first LRA units would cross the border and enter the corridors just as the second wave of fighter bombers was completing its missions.

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The LRA bombers are intended to destroy NATO air attack capabilities by concentrating on tactical and strategic airfields. Air forces intended for nuclear deliveries are the primary targets of the LRA bombers --and the primary objective of the Air Operation. In addition to airfields, nuclear weapons storage depots and command and control centers would be struck.

Attempts will be made to maximize the capabilities of currently available forces by using the medium bombers as the main striking force. The range and payload limitations of Frontal Aviation are minimized by using most of these aircraft to suppress air defenses with cannon and rocket fire. The major weakness of the Air Operation is the requirement--because of the use of the bombers--to engage rather than avoid air defenses in the execution of the corridor plan. This enables the Pact to concentrate its efforts, but could afford the same benefit to the NATO air defenses.

Subsequent Frontal Aviation Assaults

The three-wave assault would represent the initial Pact offensive air activity of the war and would involve one sortie for each of the aircraft involved. Frontal Aviation aircraft would be committed to a second sortie on the same day, as part of the Air Operation. This second assault would be similar to the three-wave assault, but the Frontal Aviation forces would not be followed by a wave of LRA bombers as in the first case. (See diagram, next page.)

The first group of Frontal Aviation aircraft in the second assault apparently would again attack targets within the corridors, and the second group would penetrate the corridors and attack targets behind the air defense belt. Because many of the air defense targets within the corridors presumably would be destroyed during the initial attack, more aircraft probably would be assigned to targets behind the air defense belt on the second assault. Once through the corridors their mission would be to

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Subsequent Frontal Aviation Sorties

The Air Operation

First wave

Second wave

75% of Frontal Aviation

Assault through the corridors but without LRA bombers.

Front missions

One-third of Frontal Aviation sorties would be allocated to front commanders. These would not necessarily be confined to corridors but would be used where needed.

Mission:

Continues attacks against air defenses and airfields, prevents repairs, and escorts returning bombers.

———— Second Frontal Aviation sortie ————

Mission:

Air defense, ground attack, and reconnaissance in support of front objectives at the discretion of front commanders.

———— Third Frontal Aviation sortie ————

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strike targets that had been missed in earlier attacks, to prevent repairs at previously struck targets, and probably to defend the LRA bombers returning from strikes conducted as part of the first assault.

Frontal Aviation aircraft probably are capable of flying about three sorties per day during the first few days of hostilities. Whereas the first two sorties would be assigned to the Air Operation, the remaining sortie would be allocated to the front commander's use for air defense, ground support, and reconnaissance in support of front objectives.

The timing and coordination of the Frontal Aviation and LRA activity are critically important. After the first mass assaults, maintenance of fighter cover over NATO territory to protect the bombers

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would require that Frontal Aviation aircraft be refueled and rearmed quickly and returned to combat. The planned timing of these later sorties probably would be distorted by NATO air attacks on Frontal Aviation recovery fields.

The Nuclear Strike Force

Because Warsaw Pact planners believe the conventional phase would be transitory, they consider it most important to maintain a readiness to deliver nuclear strikes. Under a concept similar to NATO's quick reaction alert (QRA) policy, about one-quarter of the Frontal Aviation fighter-bombers would be held out of the Air Operation during the conventional period. A portion of the LRA medium bombers in the western USSR--probably about one-third--would also be withheld. These aircraft--and the tactical and strategic missile troops--would be in the highest state of alert, prepared to preempt, or at least to react in accordance with, the anticipated NATO transition to nuclear weapons.

Although some LRA bombers may be used for conventional strikes following the initial Air Operation, a number of LRA bombers that participated in the conventional strikes probably would be added to the nuclear force. One indication of such planning occurred in the Soviet "Exercise Yug" in June 1971.

The scenario of Exercise Yug apparently postulated escalation to nuclear war late on the fourth day. During the first three days of the exercise, LRA medium bombers flew more than 130 sorties, apparently simulating the initial Air Operation. Only a few sorties were flown during the day preceding the first simulated Soviet nuclear strikes, however, which suggests that there was a standdown in LRA conventional bombing before the nuclear strikes were launched. Following the missile strikes, bomber sorties increased, probably simulating nuclear attacks.

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The specter of a reduction of their nuclear strike force through excessive losses of bombers in conventional operations could cause the Soviets to stop using the bombers for deep penetration flights after the initial mass strikes--about two sorties. Heavy losses could be incurred beyond the protective umbrella of the Frontal Aviation aircraft, particularly if the bombers were committed against targets in France, the Benelux countries, and the UK. Medium bombers have adequate range for operations against these areas and could take indirect routes and other evasive actions. Nevertheless, the defenses located within these areas probably would be intact and not disorganized by Frontal Aviation strikes. Presumably the Air Operation does not preclude LRA bomber attacks over the Baltic or North Sea approaches as well.

Ground Force Support of the Air Operation

In addition to providing ECM support, the ground forces would contribute directly to the corridor attacks. Some air defense targets in the corridors would be destroyed by artillery fire. These targets would be located within about 12 miles of the border, as this is the maximum depth which could be reached by Pact artillery from its initial firing positions.

Target Acquisition

The locations of such fixed targets as airfields, depots, and permanent surface-to-air missile sites probably are determined by strategic means--satellites. Evidently only mobile NATO tactical nuclear missiles are considered a target acquisition problem.

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Pact planners realize, however, that NATO air units probably would disperse if warned, and that locating them for attack would require further reconnaissance. Aerial reconnaissance to relocate dispersed NATO aircraft would be conducted during and after the initial strikes against forward NATO air defense positions. A continuous reconnaissance effort apparently is planned after the initiation of hostilities, first to locate dispersed NATO air units and later to locate mobile launchers.

Frontal Aviation Tactics for the
Air Operation

The characteristics of the Air Operation have brought certain changes in the traditional tactics and functions of Pact frontal air units. These changes will, to some extent, require the ground forces to rely almost solely on their own efforts for fire support and air defense. Pact planners apparently rationalize that, although the temporary reduction of direct air support to the fronts during the Air Operation is regrettable, the achievement of air superiority is the best means of insuring success in the ground war.

Under nuclear warfare concepts the fighter-bomber forces were intended to operate in small groups, using conventional weapons in direct support of ground forces and nuclear weapons against mobile missiles, defensive strongpoints, and enemy reserves. Only in isolated cases were fighter-bomber units to take part in large coordinated strikes. In the Air Operation, however, the bulk of Frontal Aviation ground-attack aircraft would be used in such strikes in the initial phase of combat.

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Frontal Aviation fighter units, according to earlier Soviet concepts, were to be responsible primarily for air defense in direct response to the requirements of the front. According to the new concept, however, Frontal Aviation fighter units would protect the medium bombers and fighter-bombers in their flights over Pact territory and through NATO air defenses during the Air Operation.

Similarly, the ground-attack support available to the ground forces would be sharply reduced during the Air Operation. As noted earlier, only about one-third of the ground-attack sorties would be in direct support of front operations while the Air Operation was in progress. This would force Pact commanders to rely more heavily on field artillery during the period of the Air Operation. Even some of the artillery, however, would be used to support the Air Operation. And, in any case, the range limitations of artillery are such that it cannot reach the deeper targets which fighter-bombers normally would attack.

Some measures have been undertaken to improve the capabilities of the ground forces to provide their own fire support and air defense. The field artillery of most Soviet ground divisions has been increased by as much as 50 percent during the past few years. Ground force antiaircraft resources have been improved with the issuance of new anti-aircraft weapons--ZSU-23-4 self-propelled guns, the SA-4 and SA-6 mobile missiles, and the SA-7 man-portable missile. Furthermore, ground forces operating within their home territories will be protected from air attack to some extent by the national strategic air defense elements.

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Control of the Air Operation

The coordination and control problems imposed by the complexity and the multiforce composition of the Air Operation necessitate an air headquarters at a level superior to the front headquarters. The Air Operation requires closely coordinated action by diverse forces which would otherwise be subordinate to each of the five front commanders, to two LRA commanders, and to two or three national air defense armies.

Participation of frontal air armies in the Air Operation apparently is governed by Soviet Marshal of Aviation Kutakhov, who would provide general guidelines for assigning units participating in the Air Operation, the type of targets to be hit, and the timing of the strikes. Kutakhov probably would assume command of all Frontal Aviation forces of the Pact to facilitate their integration into the Air Operation.

The organ of control of Pact air forces, particularly during the Air Operation, probably would be a theater-level air headquarters staffed by the Soviet General Staff or the Soviet Air Forces. A permanent theater-level headquarters has not been identified, but the concept apparently was tested in an exercise in February 1971.

Even after the Air Operation had been terminated, the Soviet General Staff, through the theater-level air command, probably would retain control of Pact air forces, allocating air units to the individual front commanders to support front objectives. Frontal Aviation, though fulfilling its traditional mission of supporting the ground forces, could be readily shifted within the theater, assigned to theater objectives, or committed to a subsequent Air Operation.

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The command structure for the control of the Pact air forces opposite the NATO Central Region necessarily would be complex and would cross national political boundaries. (A detailed analysis of the wartime command and control structure of the Warsaw Pact is not within the scope of this report.)

The more detailed planning of the Air Operation probably would be left to the various staffs of the participating LRA, Frontal Aviation, and national air defense forces. It is probably at this level that the specific targets to be hit, the order of their destruction, and the allocation of forces would be determined.

The LRA flight route would be determined by the commander of the LRA army or bomber command in accordance with the missions laid down by Kutakhov. The selected LRA routes apparently form the basis for detailed planning of Frontal Aviation activity in accordance with the overall Air Operation plan.

The Forces Available

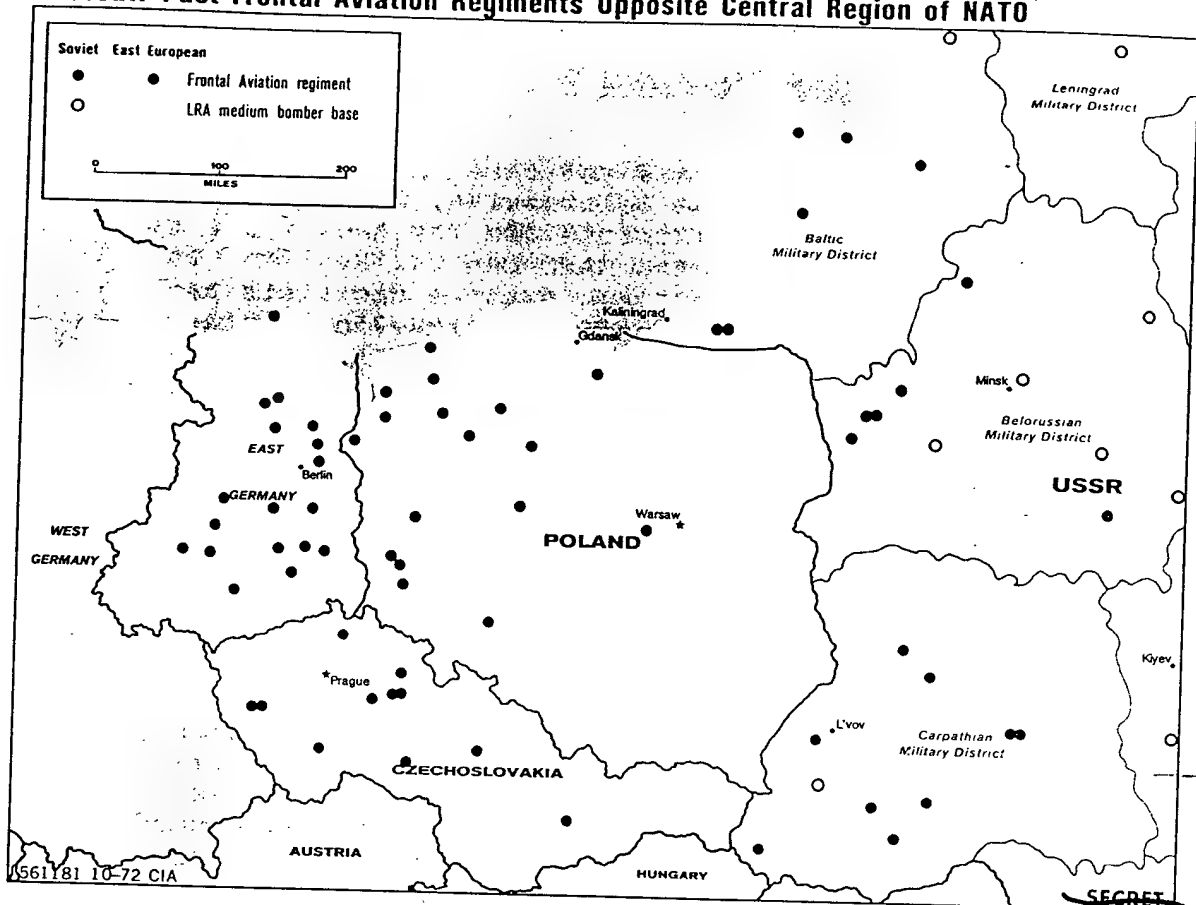
Frontal Aviation in the Forward Area

In peacetime, the Soviet tactical air armies in East Germany, Poland, and Czechoslovakia are estimated to comprise some 1,000 combat aircraft. The Polish and Czechoslovak tactical air armies add about 700 aircraft, for a total of some 1,700 tactical combat aircraft in the forward area opposite the NATO Central Region. (See table and map at right.) This force--aside from some 230 reconnaissance aircraft--is about evenly divided between tactical air defense fighters on one hand and fighter-bombers and light bombers on the other.

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Warsaw Pact Frontal Aviation Regiments Opposite Central Region of NATO



Frontal Aviation-Center Region

Type	Group Soviet Forces Germany	Northern Group Forces (Poland)	Central Group Forces (Czech)	Southern Group Forces (Hungary)	Baltic MD	Belorussian MD	Carpathian MD	Poland	Czech	Total aircraft
Fighter	324	108	72	108	72	72	108	108	108	1080
Fighter Bomber	216	108	•	36	36	132	108	216	144	996
Light Bomber	•	•	•	54	90	•	60	54	•	258
Recon	117	39	12	12	36	30	46	12	48	352
Total aircraft	657	255	84	210*	234	234	322	390	300	2686*

*The 210 Soviet aircraft stationed in Hungary probably are intended for operations south of the Center Region.

National Air Defense-Center Region

Type	E. Germany	Poland	Czech	Hungary	Total aircraft
Fighter	252	324	108	108	792

LRA-Western USSR

Type	Total aircraft
Medium Bomber	550

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Air Forces in the Western USSR

Warsaw Pact exercises indicate that Soviet tactical air forces in the Belorussian, Baltic, and Carpathian Military Districts are intended for early reinforcement against the NATO Central Region. The Frontal Aviation air armies in these districts have a total of about 790 combat aircraft--255 fighters, 425 fighter-bombers and light bombers, and 110 reconnaissance aircraft. (*See photographs and characteristics, pages 30-31.*)

The Soviets expect a period of tension before hostilities, during which preparations would be made by both sides. They plan to deploy some Frontal Aviation units to the forward area from the USSR during this period of tension.

Soviet air units from the western USSR probably would begin arriving in Czechoslovakia almost immediately after mobilization was ordered. These air units would be dependent on Czechoslovak ground-support resources until their own logistics units and supplies could arrive from the USSR about 4 to 10 days later. Soviet sortie rate capabilities probably would be reduced from three to about one and one-half sorties per day if hostilities began before their support organization and supplies arrived.

After mobilization, two Soviet fronts from the Belorussian and Carpathian Military Districts would be employed as a second echelon following the three fronts already in Eastern Europe. Although tactical air armies traditionally have been regarded as responsive only to their respective front commanders,

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the Belorussian and Carpathian air armies probably would participate in an Air Operation even though the ground forces in their two fronts were not engaged in combat.

The immediate commitment of most available aircraft to a high-intensity air war would reduce the capabilities of the Pact air forces to engage in subsequent conventional or nuclear attacks. The Air Operation apparently is more important, however, than maintaining intact air units solely for the support of the second-echelon fronts. Thus, frontal ground operations in the subsequent stages of a war in Europe could--depending on the success of the Air Operation--be hampered by a lack of air support. With the increased destructive power of the nuclear weapons which the Pact believes would eventually be employed, however, large numbers of aircraft would not be deemed necessary to destroy the remaining targets. Moreover, Pact planners hope to destroy the nuclear-capable air forces of NATO during the Air Operation and alleviate the need for large numbers of aircraft to defend the ground forces during the nuclear phase.

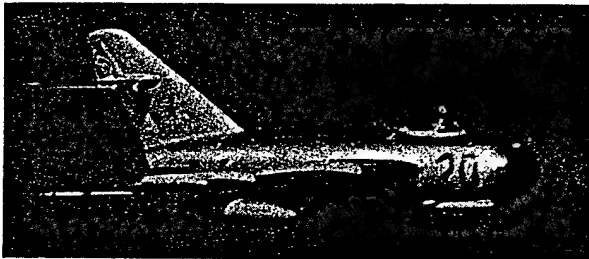
Aside from aircraft held in readiness for nuclear strikes, there is no evidence that the Pact plans to hold a significant number of Frontal Aviation aircraft in reserve. On the contrary, the importance of the initial air strikes--particularly the shock effect--probably will argue for using all available aircraft. For the initial Air Operation, then, the Pact would have five frontal air armies for operations against the NATO Central Region. These air armies currently total some 2,500 fighters, fighter-bombers, light bombers, and reconnaissance aircraft.

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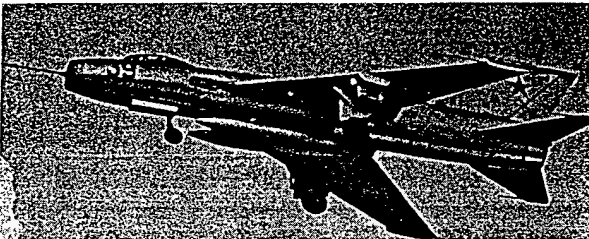
Combat Aircraft in Warsaw Pact Frontal Aviation

Performance characteristics of fighters and fighter-bombers are calculated for a maximum bomb load allowing for external fuel, in high-low-high and low-low-low mission flight profiles.



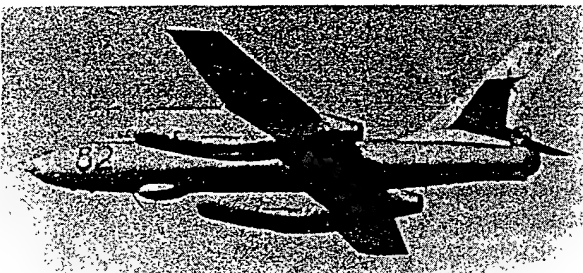
MIG-17 Fresco Fighter-Bomber

Entered service 1953
Internal guns 1 37mm and 2 23mm or 3 23mm
Payload 1 fuel tank, 1 550-lb bomb
Radius H-L-H 210 nm, L-L-L 90 nm
Comment Originally deployed as an air defense interceptor. Fighter-bomber has limited range and payload.



SU-7 Fitter Fighter-Bomber

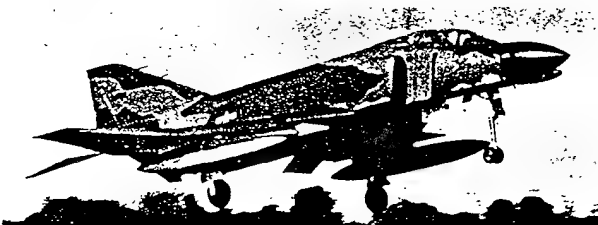
Entered service 1959
Internal guns 2 30mm
Payload 2 fuel tanks, 2 550-lb bombs
Radius H-L-H 315 nm, L-L-L 155 nm
Comment Poor low-level capabilities.



IL-28 Beagle Light Bomber

Entered service 1950
Internal guns 4 23mm
Payload 6,600 lbs maximum, 2,200 lbs normal
Radius H-L-H 490 nm, L-L-L 255 nm
Comment Age of these subsonic light bombers probably has reduced payload and low-level capabilities.

Comparison with US aircraft:



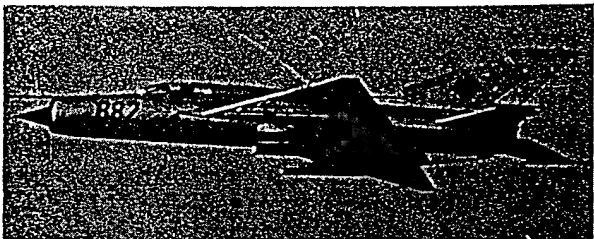
F-4 Phantom Fighter-Bomber

Entered service 1961
Internal guns None (Guns can be mounted externally)
Payload 6,000 lbs bombs, 2 external fuel tanks
Radius H-L-H 460 nm, L-L-L 300 nm
Comment General-purpose fighter can carry 10,500 lbs of bombs and four AAMs to 170 nm (L-L-L) without external fuel.

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MIG-21 Fishbed D/F Fighter

Entered service 1962/1965
Internal guns None (Can be fitted with a center-line gun pod)
Payload 1 fuel tank, 2 550-lb bombs
Radius H-L-H 390 nm, L-L-L 150 nm
Comment Primary air defense fighter in Frontal Aviation units of Warsaw Pact.



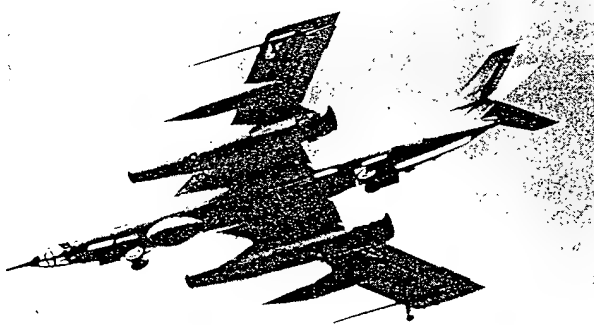
MIG-21 Fishbed J Fighter

Entered service 1969
Internal guns 1 23mm
Payload 1 fuel tank, 4 550-lb bombs or 64 57mm rockets
Radius H-L-H 350 nm, L-L-L 140 nm
Comment Air defense fighter with ground attack capabilities improved over earlier Fishbed models.



MIG-19 Farmer Fighter

Entered service 1955
Internal guns 1 37mm and 2 23mm or 2 30mm or 3 30mm
Payload 1 fuel tank, 2 550-lb bombs or 64 57mm rockets
Radius H-L-H 140 nm, L-L-L 50 nm
Comment Limited numbers in Frontal Aviation air defense units.



YAK-28 Brewer B Light Bomber

Entered service 1963
Internal guns 1 23 mm
Payload 6,600 lbs maximum, 3,300 lbs normal
Radius H-L-H 475 nm, L-L-L 210 nm
Comment Designed as supersonic, nuclear-strike aircraft.

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Medium Bomber Forces

During the conventional phase, the primary striking force available to the Pact in terms of range and payload would be the LRA medium bombers of the Northwest and Southwest Bomber Commands. There are some 375 TU-16 Badgers and 175 TU-22 Blinders in these two commands. (See photographs at right.) The number of bombers available would be reduced by the requirement for nuclear readiness as well as by the number configured for reconnaissance and by operational factors, such as maintenance needs, to about 310. About 90 of these probably would be supersonic Blinders, and the remainder Badgers.

The LRA medium bombers probably would not deploy to the forward area before or during hostilities. Operating from the western USSR the bombers would have sufficient range to attack any target in Europe and return to base. Moreover, forward deployment of these bombers would bring their bases within range of NATO fighter-bombers.

National Air Defense Interceptors

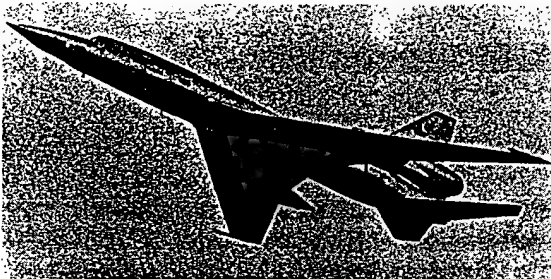
The more than 700 interceptors in the national air defense forces of Poland, Czechoslovakia, and East Germany would play a supporting role in the Air Operation. These aircraft would be tasked with protecting the LRA bombers overflying Pact territory. They also would assume much of the responsibility for defending the ground forces in friendly territory, to free Frontal Aviation fighters for the Air Operation over enemy territory.

The primary mission of the national air defense interceptors continues to be the protection of Pact territory. Pact planners expect NATO air forces also to launch mass air attacks, once hostilities

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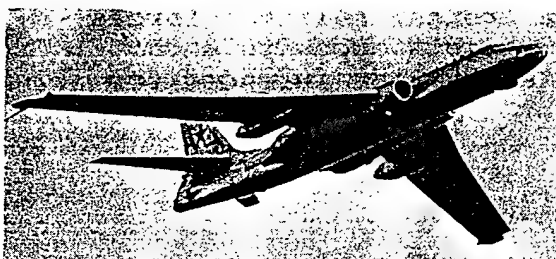
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Soviet Medium Bombers Available for the Air Operation.



TU-22 Blinder A Medium Bomber

Entered service	1962
Payload	Normal 6,600-lb bomb load
Radius	1,750 nm at optimum altitude*
Comment	Capable of supersonic dash at higher altitudes.



TU-16 Badger Medium Bomber

Entered service	1954
Payload	Normal 6,600-lb bomb load
Radius	1,650 nm at optimum altitude*
Comment	Aging, with poor low-altitude capability.

** Radius would be reduced in proportion to the part of the mission flown at low altitude. If the entire mission were flown at low altitude the radius would be reduced by as much as two-thirds. In reality, however, only the portion of the mission flown over heavy NATO air defenses would be at low altitude.*

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begin, against Pact airfields, air defense installations, command and control centers, troop concentrations, and supply lines. The Air Operation probably would result in an expansion of responsibilities for the national air defense forces and not a significant change in tactics or missions.

Rather than flying close escort for the transitioning bombers, the national air defense interceptors probably would defend the bombers--and the ground forces--by engaging any NATO aircraft that are operating over Pact territory. Although the national air defense forces normally are responsible for defending only targets in Pact territory, the interceptors probably would engage enemy targets at distant approaches, operating to some extent over NATO territory.

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The Forces Required

The First Wave

The critical factor for Pact planners is the number of corridors to be cleared through the NATO forward air defenses. This probably will be determined by several variables including the requirements of the LRA commanders, the Frontal Aviation forces available, the density of targets opposite each front, and the degree of destruction intended for each corridor.

Requirements for One Corridor

About 9 to 10 regimental sorties--usually 36 aircraft per regiment--of SU-7 or MIG-17 fighter-bombers probably would be allocated, in conjunction with ground artillery, to destroy the targets within each corridor zone. Because surprise is a primary factor, all of the intended corridors would be attacked simultaneously. This would prevent use of the same units to open more than one corridor in the initial attacks.

There would be one or two corridors opposite each frontal zone. Analysis of highly reliable evidence indicates that three Warsaw Pact fronts are expected to be engaged initially opposite the NATO Central Region. These would require the clearing of a total of three to six corridors and the assignment of as many as 60 regiments--2,160 aircraft--to the first wave of the Air Operation. Only about 40 percent of the available tactical aircraft would be used in the initial assault because of the requirements for subsequent attacks and for standby aircraft for possible nuclear strikes.

Pact planners probably recognize that the available air forces are likely to be less than the theoretical requirement posed by the concept. Although

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the complete destruction of the air defense targets within the corridors is the most desirable objective, there may not be sufficient air forces available to achieve this. Accordingly, they probably estimate that the suppression of air defenses for a 25- to 30-minute period to protect incoming aircraft, and for one hour to protect returning aircraft, could be accomplished using only about one-half the aircraft and artillery required to destroy the targets completely.

Some 1,000 aircraft--40 percent of the total available to the five fronts--probably would comprise the first wave of the air assault. The number of aircraft allocated to each corridor would depend on the number of corridors and the degree of destruction intended for each.

The Pact planners probably would not consider each of the targets opposite the first-echelon fronts to be of equal importance. They might vary the strength of attacks according to the target, the criticality of the particular front zone or corridor, and the attack forces available. Within the constraints of the Air Operation the total forces available to the Pact could attempt to destroy the targets in three corridors, temporarily silence six corridors, or execute a combination of these--for example, destroying targets in two corridors and suppressing those in two.

The Second Wave

About 35 percent of the available Frontal Aviation forces probably would be allocated to the second wave to penetrate the corridors and attack targets behind the air defense belt. Thus, some 875 aircraft would comprise the second wave of the Air Operation. In the individual corridors the strength of this second wave probably would depend on the criticality of the targets beyond the air defense belt and on the numbers of LRA bombers to be escorted through the frontal zone.

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The ground-attack requirements of the first and second waves of the Air Operation and the requirement for nuclear readiness aircraft would far exceed the numbers of ground attack units available to Frontal Aviation in the forward area. For example, if total available Frontal Aviation forces were committed to three equally important corridors, some 830 aircraft would be allocated to each front zone for the first and second waves and to satisfy the requirements for nuclear readiness forces. About half would be tactical air defense fighters.

The total air defense mission for the assault opposite each front probably would require less than 100 air defense fighters, however, and the total requirement for ground attack and nuclear readiness could not be filled by the available ground attack aircraft. At least for the initial stages of the overall Air Operation, some air defense regiments would have to be utilized in ground-attack missions. Because their training and equipment are not primarily oriented toward ground-attack missions, air defense units would be less effective in this role than would regular ground-attack units. Some of the later model MIG-21 fighters, however, have a better ground-attack capability than earlier model fighters.

In allocating the fighter-bombers between the first and second waves, the first wave probably would get preference. The ground-attack mission in the corridors is characterized by attacks against smaller targets--some of which are mobile--in what probably would be an intensive air defense environment. Fighter-bomber regiments which have had more training than air defense regiments in this type of attack would probably be assigned this role.

Air defense units probably could best be utilized in the second wave of the Frontal Aviation attacks against targets behind the forward air defense belt. These are larger, fixed targets and would not be as difficult to attack as the forward air defense sites assigned to the first wave. Be-

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cause these units are equipped with fighters and trained in air-to-air combat, they would be better prepared to cope with the greater NATO interceptor threat in their operating area. Frontal Aviation fighters are also intended to fly fighter sweeps against NATO aircraft in this zone and escort the LRA bombers.

The Third Wave

There is no evidence as to how the 310 medium bombers estimated to be available for the Air Operation would be allocated. Nor is there any evidence as to the numbers of bombers required to hit specific targets.

The bombers would be escorted over friendly territory by national air defense fighters and over NATO territory by Frontal Aviation fighters. In addition to attempting to destroy NATO aircraft on the ground, Frontal Aviation fighters in the second wave apparently would fly defensive patrols along the LRA flight paths to defend against NATO interceptors in the frontal zone.

The portion of the second wave that would be assigned these escort duties, as opposed to ground-attack missions, is not known. The Air Operation, however, emphasizes the destruction of NATO interceptors on the ground, and probably not more than two regiments would be assigned to bomber escort missions in each flight corridor.

Nuclear Readiness Forces

One of the primary responsibilities of the air forces during the conventional stage of a war in Europe would be to maintain forces capable of responding to, or possibly preempting, the "inevitable" NATO nuclear strike. About 25 percent of the Frontal Aviation aircraft and an estimated one-third of the LRA bombers would be withheld from con-

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ventional air attacks to participate in the first Pact nuclear strikes.

Total nuclear readiness forces probably would be nearly 170 medium bombers and some 625 Frontal Aviation aircraft.

The Frontal Aviation forces withheld probably would comprise primarily fighter-bomber and light bomber units which have had training in the delivery of nuclear weapons.

Other Air Activity

The allocation figures cited--except for the nuclear readiness requirement--represent only one sortie per day for each aircraft. LRA bombers are capable of only one sortie per day, and this is assigned to the Air Operation. Frontal Aviation fighters and fighter-bombers, on the other hand, can conduct as many as three sorties per day in the initial stages of a conflict. One Frontal Aviation sortie would be assigned to the three-wave assault as outlined; one sortie would be part of a two-wave Frontal Aviation assault similar to the three-wave assault but without the LRA bombers; and the third sortie would be allocated to the respective front commanders for the traditional roles of air defense and ground support.

The Warsaw Pact has sufficient available aircraft to fulfill the requirements for the Air Operation. However, the Air Operation depends upon the immediate use of the reinforcing aircraft from the western USSR.

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Allocation of Frontal Aviation Aircraft

The Pact apparently plans to have sufficient Frontal Aviation aircraft to destroy the air defenses in three corridors on the first sortie and still maintain a reserve for nuclear attack. The strength of the attacks and the number of corridors would depend on the density of air defenses within the corridors and the criticality of the targets behind the air defense belt. The air defenses in a corridor could be suppressed using only half the number of aircraft required for total destruction. Rather than destroying three corridors or suppressing six, Pact forces probably would select a combination of these, such as two corridors destroyed and two suppressed. The chart below represents the estimated numbers of Frontal Aviation aircraft and sorties that could be applied in these operations. Losses sustained are not considered on the chart.

The Air Operation		Withheld for nuclear readiness	Total
First sortie per day, with LRA bombers			
First wave 40%	Second wave 35%		
1,000 aircraft 1,000 sorties	875 aircraft 875 sorties	625 aircraft	2,500 aircraft 1,875 sorties
Second sortie per day, without LRA bombers			
During the second sortie, Frontal Aviation would again be committed in wave attacks but the percentage in each wave is not known. Presumably, without the need to protect bombers more aircraft could be freed from the task of clearing the corridors and be used for attacks behind the air defense belt.		Aircraft withheld for the nuclear readiness requirement would not be active during the Air Operation. The figure withheld would remain constant.	
1,875 aircraft 1,875 sorties		625 aircraft	2,500 aircraft 1,875 sorties
Third sortie per day			
One-third of the Frontal Aviation sorties would be allocated to the front commanders for the traditional missions of air defense, ground attack, and reconnaissance in support of the front.			
1,875 aircraft 1,875 sorties		625 aircraft	2,500 aircraft 1,875 sorties

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